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ABSTRACT

This report presents the results of a study of higher education in California, focusing on the impending fiscal crisis of increasing demand, tuition, and costs. The study found that at a time when the educational needs for productive employment are increasing, college costs and demand are rising faster than funding. Until now, institutions have covered rising costs by sharp tuition increases; however, unless sweeping changes are made to control costs, such increases will shortly begin to keep Californians from pursuing higher education. The report notes that if current rates of tuition increases continue, by the year 2015 as many as 30 to 45 percent of students may be denied access. The report recommends: (1) that California's political leaders reallocate public resources to reflect the growing importance of higher education; (2) that institutional decision-making systems be restructured to reallocate scarce resources; (3) that institutions pursue greater mission differentiation; (4) that institutions develop sharing mechanisms to improve productivity; (5) that California should develop a strategic plan for allocating limited resources to meet future educational demands; and (6) that all Californians be encouraged to pursue some form of postsecondary education. (MDM)

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ED 414 807

BREAKING THE SOCIAL CONTRACT

The Fiscal Crisis in California Higher Education

Roger Benjamin

Stephen J. Carroll

HE 030 700

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- It collects, interprets, and disseminates data on educational philanthropy for the funding community, for educators and education policymakers, and for government decision makers;
- It offers analysis and commentary on key aspects of education policy and practice.

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To Our Readers

This report presents the results of a study of California higher education conducted by RAND and commissioned by the California Education Round Table. Our central finding is that the present course of higher education in the state—in which student demand, tuition, and costs are rising much faster than public funding—is unsustainable. Unless significant steps are taken to address the situation, hundreds of thousands of Californians will be denied access to higher education within the next 20 years.

Our research was supported by a grant from The William and Flora Hewlett Foundation through a subcontract from The Regents of the University of California on behalf of the California Education Round Table. This report documents the first state-based analysis to employ a methodology developed in a parallel study for the Commission on National Investment in Higher Education, which was established by the Council for Aid to Education, an independent subsidiary of RAND. The results of that study, which focused on the fiscal health of colleges and universities nationwide, were recently published in *Breaking the Social Contract: The Fiscal Crisis in Higher Education.*

On behalf of the RAND research staff, we wish to thank the members of the California Education Round Table for the broad experience and sound judgment they brought to our task. We are also grateful to the Technical Advisory Committee, whose members made important contributions to our analysis, often traveling the length of the state to help shape the direction of the study, listen to briefings of interim results, and comment on the main report and the technical papers listed at the end of this volume. This report benefited greatly from their guidance. The findings and recommendations presented here are, nevertheless, ours, and should not be seen as representing the views of our sponsors or of RAND.

Roger Benjamin
Director, RAND Institute on Education and Training
President, Council for Aid to Education

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Overview

All members of the higher education community remain fundamentally committed to the Master Plan in California, including its two major provisions: (1) make postsecondary education available to all California citizens who can benefit from it, and (2) pursue mission differentiation among the three segments of public postsecondary education in support of provision 1. Unfortunately, there are signs that the farsighted social contract designed by Clark Kerr—the guarantee that all California citizens who can profit from higher education should have access to it—will soon be broken.

Postsecondary education in California faces challenges unprecedented in its history, and it is floundering in response. The social and economic characteristics of California's population are changing so profoundly and rapidly that the current higher education sector as a whole is already misaligned with the state's postsecondary needs. Each of the three segments of the public higher education sector—the University of California, the California State University, and the community college system—pursues its goals as understood through policy and practice. The question is whether these three parts together can meet California's postsecondary education requirements or whether the future holds a tragedy of the commons in which hundreds of thousands of Californians seeking postsecondary education will be turned away.

To determine the dimensions of this problem, our project examined two questions:

- How well will the state's higher education systems fulfill their access objectives and other commitments in the future?
- Is the current mission differentiation among the public systems appropriate to meet these future commitments?

What we found is that the monetary difficulties of California higher education institutions, thought for a time to be only temporary, are the result of long-term trends in demand, costs, and funding that are likely to continue. Enrollments have increased ninefold since 1954 and will continue growing over the next two decades. At the same time, operating costs have escalated and public sector financial support has flattened. As a result, colleges and universities in California have had to sharply increase tuition and fees and look for ways to control costs in order to avoid financial disaster.[1]

[1]It is important to note that our research focused mainly on the public, rather than the private, sector of postsecondary education in California. The independent higher education sector in California, enrolling over 125,000 undergraduates and 100,000 graduate students per year, is vital to the future well-being of California higher education. Indeed, as we discuss later, the California grant program should be expanded to allow the independent colleges in California to accommodate additional undergraduate students. However, because the upcoming access demands for postsecondary education are of such great magnitude, our primary focus had to be on the state's public higher education sector. In relation to this subject, two points should be stressed: Independent colleges face the same problems as their public counterparts with regard to containing costs and limiting tuition increases, and the pressures on private research universities in California are similar to those on the University of California.

We have concluded that unless the state takes effective action, the fiscal situation will worsen, tuition will continue to increase, and whole sectors of California's population will find themselves increasingly excluded from entry to postsecondary education and, consequently, from the growing number of occupations that require postsecondary course work for employment. Furthermore, the education bottleneck is narrowing at a time when economic inequality is increasing in California and social demographics are changing dramatically. Over the past 20 years, the middle class in California has dwindled and more families have been finding themselves among the poor. If current trends go unchecked, the divide between the rich and the poor in California will have widened so dramatically by 2015—and will be drawn so sharply along ethnic lines—that it will not only undermine the productivity and international competitiveness of the California economy, but will also threaten the social and political stability of the state. If current trends continue, more than one-third of the Californians seeking to enroll in one or another of the state's public postsecondary education systems could find their path blocked by the year 2015.

This confluence of circumstances has created a time bomb ticking under California's social and economic foundations. The college degree has replaced the high school diploma as the entry card into productive employment. If this degree is increasingly out of reach for large segments of the California population, then a revolution in education is essential to avert increasing social unrest. And if the productivity of employees is related to their level of education, then an educational system that makes it almost impossible for millions to become highly productive workers must be reformed to maintain the competitiveness of the California economy in the international marketplace.

Adding to the problem is the decline in federal funding of research, which is putting California's research universities at a distinct disadvantage in relation to international competitors, particularly in the natural sciences and engineering. In addressing the increased demand for access to postsecondary education and training, California must also protect and enhance the ability of its public and private research universities to carry out their critically important mission. Indeed, if only to keep the slim R&D edge that California still holds in key industries in world markets, the state's public and private sector leaders must dedicate themselves to reversing the current trends in funding.

We believe that California needs a sea change in its postsecondary education—not just an improvement of accepted assumptions, structures, and practices, but a change in kind. Moreover, because it is very difficult for any group to reform itself alone, the challenge this change presents cannot be addressed solely by the postsecondary education establishment in California.

Business and political leaders, educators, and the public must all participate in the search for, and implementation of, appropriate responses.

We also believe that public funding for California postsecondary education has been insufficient for the last decade and is very unlikely to increase enough to underwrite the needs of the state's higher education sector in the future. Our recommendations emphasize the need for both greater public support of higher education in California and comprehensive institutional reform so that available resources can be reallocated and other changes implemented to target and streamline operations. In short, we believe that

- Public resources in California should be reallocated to reflect the central importance of postsecondary education and training. Increased funding, however, should be tied to institutional reform so as to create incentives for innovation and improved productivity.
- The decisionmaking systems of colleges and universities should be restructured to allow resource reallocation.
- The missions of the individual postsecondary systems and the individual colleges and universities should be sharpened to create greater mission differentiation as a way to streamline their services and better serve their diverse constituencies.
- Colleges and universities should develop mechanisms for sharing services and infrastructure.
- The state should develop a financing plan for allocating its limited resources to most effectively meet future educational demands.
- The Master Plan should be reaffirmed and strengthened, and the education level expected of all California citizens should be raised from high school to the completion of some form of postsecondary education or training.

Unlike many states, California has an extraordinary set of postsecondary education institutions at its disposal. If these institutions are to fulfill their role in positioning California for its next phase of economic and social development, higher education leaders must work with policymakers and business leaders to bring about the needed institutional redesign. In short, California must devise a much more effective strategic plan for developing its human resources than it has now. ◆

The Threat from Within

Recent shifts in California's economy have made higher education more significant than ever. Industrial jobs, once the backbone of the economy, are dwindling—in 1990 they provided employment for less than 17 percent of the workforce. The service-related jobs taking their place in today's economy require a level of knowledge and skill that, for the most part, can be gained only through programs offered at California's colleges and universities. Californians cut off from higher education will be unable to attain the proficiency levels needed to master new technologies and enter new occupations.

This shift in the educational requirements demanded by the workplace has put great pressure on the educational system. At a time when California must educate a larger and more diverse population than ever before, it must also educate to levels never before required. Those who stop at a high school diploma or before completing high school are likely to face a bleak economic future, a fact attested to by the growing disparity in the incomes of the rich and poor. If current trends persist, the economic disparities that will exist in California by 2015 will pose a grave danger to society:

- A much larger proportion of the population will fall below the standard of living considered average today.
- The real hourly wages of the average male worker will decline by about 50 percent compared to what they were in the 1970s. For those near the bottom of the wage distribution, hourly earnings will slip by about 60 percent.
- The proportion of immigrants in California's workforce will continue to grow, and most of the new immigrants will be from Mexico and Central America, a group with historically low levels of education and thus limited prospects for economic success.
- Ethnic/racial groups will not participate equally in college education, creating little chance for underrepresented groups to improve their standard of living. As a result, the educational and economic fault lines in the state will be drawn increasingly in terms of ethnicity and race.

This portrait of the future is not a prediction. It is simply an extrapolation of the earning patterns, described more fully below, of the 20-year period from 1976 to 1995 (the most recent year for which data were available). We believe the growing gap between the rich and the poor is one of the greatest threats to California's—and the nation's—economy. At the heart of this problem is the profound change that has taken place in the level of knowledge and skill required to be a productive worker in today's economy. Improving the education and training of all Californians is, in our view, the only way to combat this threat and reduce the growing divide.

Trends in Wages

As has been well documented in research, wage disparities have been growing. Figure 1 shows the distribution of hourly wages among all male workers in California, in real terms, adjusted for inflation and indexed to

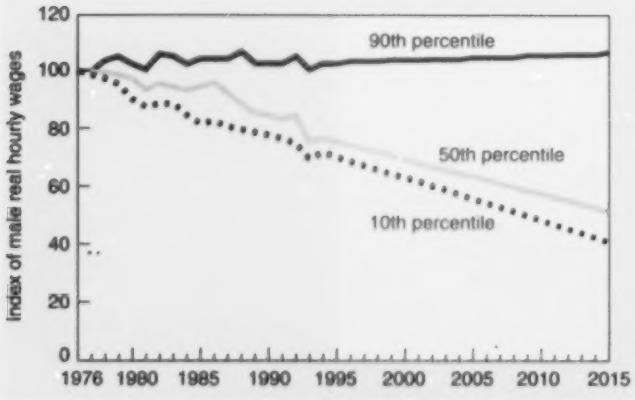

Figure 1—Long-Term Trends in Hourly Wages of California Male Workers

1975.[2] (In other words, 1975 is shown as a base, and wages estimated for subsequent years are shown as a percentage of what they were in 1975.) The figure shows only male wages, but disparities in female wages are growing at about the same rate. The top line represents changes in earning levels for workers at the 90th percentile of all male wage earners. It shows slow growth over the 20 years extrapolated out to the future.

The message here is that the highest paid workers will hold their own to 2015. Those in the 50th percentile—workers right in the middle of the distribution—have lost about 25 percent in real wages over the past 20 years; by 2015, they will be earning about 50 percent of what they earned in 1975. And those workers in the bottom 10 percent will fare even worse if current trends continue: They will be earning only about 40 percent of what they earned in 1975.

A doubling in the proportion of immigrants in the workforce since the 1970s (over 25 percent of the state's workforce is now, in 1997, foreign-born) and the lower education level of the more recent immigrants are additional factors in the growth of income disparity. Figure 2 shows the growing share of California's workforce born in other countries. In 1990, 50 percent of the immigrant workforce came from Mexico or Central America. Because the education level of Mexican and Central American immigrants is generally lower than that of other immigrant groups, the earnings of these recent immigrants have deteriorated relative both to native workers and to earlier immigrants and are likely to remain low throughout their working lives. If these trends hold, a growing proportion of workers will have less than a high school diploma and will face declining earnings over their lifetimes.

Education and Income: The Intimate Link

The single most important factor in determining level of income is level of education. Figure 3 shows the distribution of real hourly wages of male workers across the

[2]These RAND calculations are based on data in Deborah Reed, Melissa Glen Haber, and Laura Mameesh, *The Distribution of Income in California*, San Francisco: Public Policy Institute of California, 1996, p. 41.

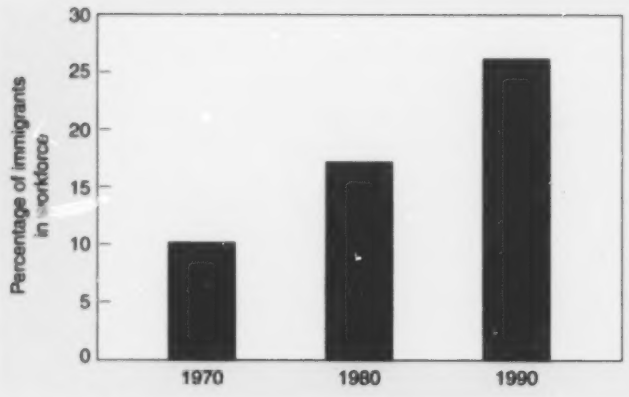

Figure 2—Immigrants in California Workforce

nation by education level.[3] Men with a college education have kept pace with inflation in the past two decades, men with some college education have seen a decline in real income of 14 percent, and men with only a high school diploma have lost 18 percent. Meanwhile, real wages of high school dropouts have declined by 25 percent.

If these lines are drawn out another 20 years using the same rates, the result is devastating. By 2015, male workers with only a high school education will have lost 38 percent of what comparable male workers earned in 1976. And those without a high school diploma will have lost 52 percent in real earnings over the same period. If the California economy continues to place a high value on a college-educated workforce, which we believe it will, then only college graduates will be able to hold their own economically out to 2015.

Those who attend some college will not do too badly, but those who stop pursuing an education before or upon graduating from high school will lose ground over their working lives.

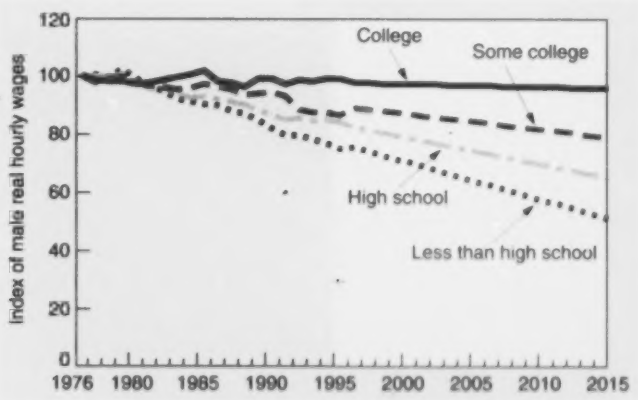

Figure 3—National Distribution of Hourly Wages for Male Workers by Education Level

[3]Data are from U.S. Department of Census, *1990 Census of Population. Social and Economic Characteristics California*, Section 1 of 4, pp. 165-167, and *1970 Census of Population Characteristics of the Population*, Part 6, Section 1, p. 382. See also Robert F. Schoeni, Kevin F. McCarthy, and Georges Vernez, *The Mixed Economic Progress of Immigrants*, MR-763-IF/FF, Santa Monica, Calif.: RAND, 1996.

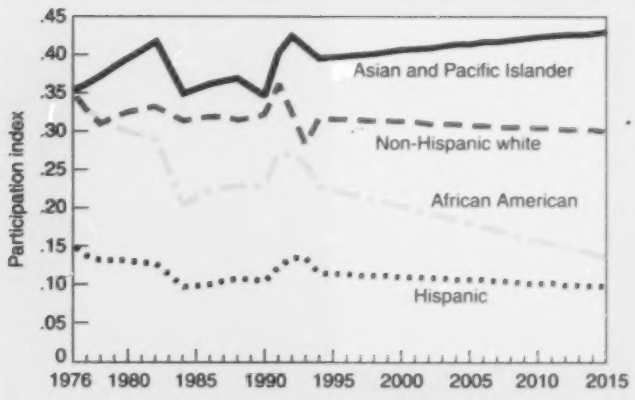

Figure 4—Participation of Different Ethnic/Racial Groups in California Higher Education

This economic polarization is particularly troublesome in that a growing proportion of the poor will be African American and Hispanic. Like Asians and non-Hispanic whites, African Americans and Hispanics suffer lifelong economic consequences if they do not pursue higher education. Because larger proportions of these two groups fail to go beyond high school, larger proportions of these groups are among the poor. Figure 4 shows an index that conveys the ratio of the number of students in higher education for various ethnic/racial groups to the total number of 18- to 29-year-olds in those groups.[4] The figure plots changes in that index over the past 20 years and extrapolates the rates out to 2015.

As of 1995, Asians and Pacific Islanders scored over 40 on this index, and non-Hispanic whites scored just over 30. In contrast, African Americans and Hispanics scored about 20 and 18, respectively. If current trends persist, participation by Asians and Pacific Islanders will increase over the next 20 years while participation by non-Hispanic whites will remain steady. Participation by Hispanics is likely to also remain steady, at a level well below those of Asians and Pacific Islanders and non-Hispanic whites. Absent policy or program interventions or improvements, the educational gaps between Hispanics and the other groups are projected to continue through the foreseeable future. For African Americans, the picture is even worse. The past two decades have seen this group's participation fall dramatically. If this trend is not reversed, the educational gap between African Americans and other groups will grow even wider.

It is in the interest of all Californians to promote higher levels of education and training for those who are rapidly losing earning power. An educated California workforce generates greater incomes for individuals and greater revenues for public services. In contrast, low levels of education are powerful predictors of welfare dependency, unemployment, and incarceration, all of which are very costly. ◆

[4]Entollment data are from the National Science Foundation CASPAR database; population data are from the U.S. Census.

Dimensions of the Fiscal Crisis

Will California's higher education sector be equipped to meet the needs of future students? Because of population growth alone, the state will have to be prepared to educate 60 percent more students in 2015 than it educates now, in 1997. And if the proportion of the population that attends college also increases, as we think it should, the student population will be even larger. Will the revenue base of California's colleges and universities be sufficient to handle such an increase?

Our analysis shows that if current funding trends continue, the higher education sector will face a calamitous shortage of resources. Unless public funding increases significantly and institutions undergo fundamental internal restructuring to improve their productivity, access to higher education is going to be dramatically reduced in the future.

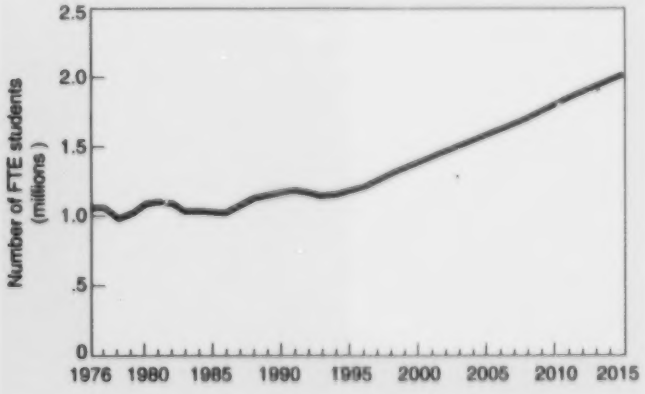

Figure 5—Past Enrollment and Projected Demand for California Higher Education

Growth in Demand

Enrollment in California's colleges and universities has grown rapidly since the 1930s. This growth is, of course, a reflection of a growing California population. But it is also a reflection of the phenomenal increase in the percentage of Californians pursuing education beyond high school. California's population is expected to continue to grow into the next century, as is the rate at which Californians go to college. As Figure 5 shows, if these trends continue, the total number of students in the state's colleges and universities will increase from the 1997 level of 1.3 million to about 2 million full-time equivalent (FTE) students by 2015—a 60 percent increase, and twice the projected increase for the nation as a whole.[5]

[5]Past enrollments were calculated from California Postsecondary Education Commission, "Enrollments in California Public Postsecondary Education," in *Fiscal Profiles 1996*, displays 53-56. RAND projections are based on California Postsecondary Education Commission, *Student Profiles 1995*. We computed the participation rates by age implicit in those projections and extrapolated the trends in those rates through 2015. We then multiplied estimated participation rates by the census projections of age distributions of the population to 2015.

Note our usage of "full-time equivalent" students. Since many students are part-time, placing smaller burdens on institutions, they are traditionally counted as FTE students. Thus, for example, a part-time student whose course load is 70 percent of a full-time load is counted as 0.7 FTE. For forecasts of actual headcount enrollments, see California Postsecondary Education Commission, *Challenge of the Century*, CPEC 95-3, April 1995.

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Growth in Costs

The costs per student in higher education have also risen. In fact, they have grown consistently for at least 30 years, escalating sharply since the late 1970s. The Higher Education Price Index (HEPI) reflects real increases in prices paid by higher education institutions for goods and services.[6] As Figure 6 shows, the HEPI rose almost sixfold between 1966 and 1995. Higher education's costs grew faster than inflation, as measured by the Consumer Price Index (CPI), between 1980 and 1995. The annual average rate of growth in the costs of providing higher education exceeded the CPI by a full percentage point.

No index comparable to the HEPI exists for California. However, the average expenditure of unrestricted funds per FTE student in each of the three public systems varies with the mix of personnel and material purchased.[7] Because this mix for any of California's three public systems does not vary much over time, most of the observed changes in the level of average unrestricted expenditures can be attributed to changes in the prices paid for personnel and material. The line labeled "California costs" in Figure 6 shows the trend in aggregate average unrestricted expenditures per FTE student in California's public systems. The effects of the business cycle are clear: In good economic times, such as the mid-1980s, expenditures per student grow rapidly; in poor economic times, such as the early 1990s, expenditures per student grow slowly. But, overall, the trend is consistent with the trend in the HEPI. If anything, it appears that costs in California's public systems, as measured by unrestricted expenditures, may be growing

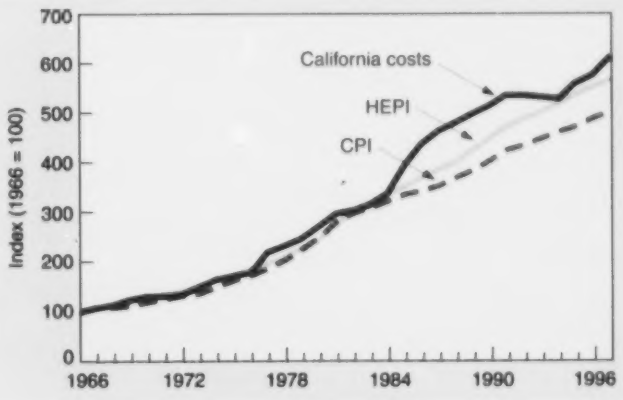

Figure 6—Growth of Costs to California Higher Education Institutions

[6]The HEPI is a national index that measures the average change in prices over time for a fixed basket of goods and services that higher education institutions buy to support current operations. These goods and services include salaries of faculty, administration, and other professional and nonprofessional personnel; contracted services such as communications and transportation; supplies and materials; equipment; library acquisitions; and utilities. See Research Associates of Washington, *Inflation Measures for Schools, Colleges, and Libraries*, Washington, D.C., 1995.

[7]All funds except those for externally supported research and from the sale of services (such as medical care) are considered unrestricted funds.

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even faster than costs nationally, as measured by the HEPI.[8] A sector whose costs grow faster than inflation for an extended period ultimately reaches the limits of available resources, as has been demonstrated in the health care industry.

Decline in Public Funding

Given the increases in demand and costs, it is surprising that public funding has not shown similar increases. As Figure 7 shows, California's general fund appropriations to higher education grew slowly from 1982 to 1989 in real terms but then declined in the early 1990s.[9] They have increased slightly in the past three years, and projections for funding increases are positive for 1998 and 1999. However, the relatively stable, flat 25-year history of general revenue appropriations to California postsecondary education is likely to remain largely unchanged.

In effect, California has been underfunding higher education since the mid-1970s. Figure 8 shows the share of personal income allocated through state and local government appropriations to higher education from 1970 to 1996. From 1970 to 1978, Californians increased the share of their personal income that went to higher education—from just over $10 to $15 per $1,000 earned. Since 1978, however, that share has been steadily decreasing.

This is not to say that taxes—federal, state, and local—have not been increasing since 1978. What has changed is government spending priorities. At the federal level, the growth of entitlements—most notably, Social Security, Medicare, and Medicaid—has dominated federal spending, as Figure 9 illustrates. Mandatory spending on entitlement programs and interest on the national debt consumed about 38 percent of the

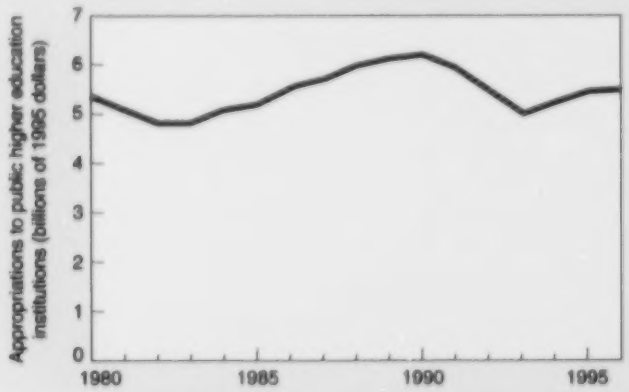

Figure 7—California General Fund Appropriations to Higher Education

[8]The "California costs" line in Figure 6 is for all three public systems combined. When we performed this calculation for each of the systems separately, the lines showing their respective average expenditures of unrestricted funds per FTE student were indistinguishable. A recently initiated study by the Institute of Higher Education, supported by Dr. Barry Munitz and sponsored by the Ford Foundation, is examining the cost and productivity questions in substantial detail.

[9]These RAND calculations and those used for Figure 8 are based on data from the *Governor's Budget, State of California*, 1970-1997.

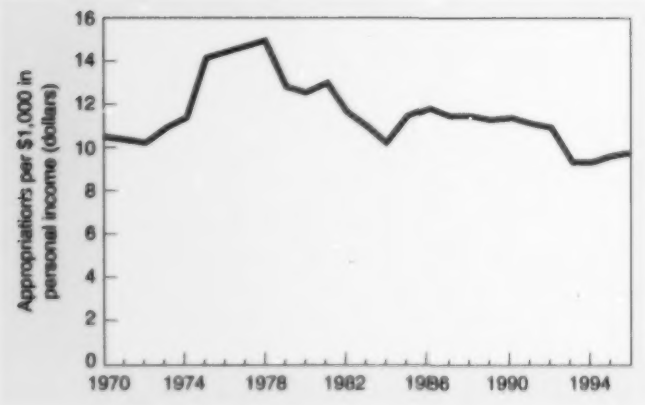

Figure 8—Share of Personal Income Allocated to California Public Higher Education

federal budget in 1965. In 1995, they accounted for about 67 percent. The entitlement programs focus largely on older Americans, which means that as the baby boomers age, the population drawing on these programs will increase. The Congressional Budget Office estimates that in 2005—less than a decade from now—these programs will consume almost 75 percent of federal revenues. This vast intergenerational transfer of wealth is squeezing higher education out of the federal budget.

The situation at the state level is very similar. California's mandatory expenditures on health and welfare programs, K–12 education, and corrections are consuming a rapidly increasing share of the General Fund. In particular, the plight of higher education in state budget battles is exacerbated by rapid increases in spending on corrections, mainly prisons. Figure 10 shows the 1995 distribution of California state government spending and extrapolates existing trends

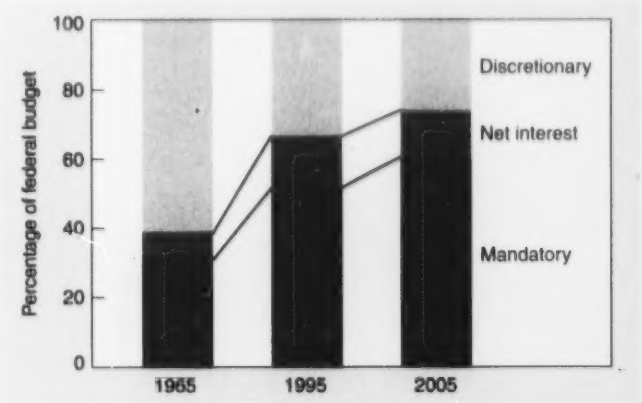

Figure 9—Erosion of Federal Budgetary Discretion by Entitlements

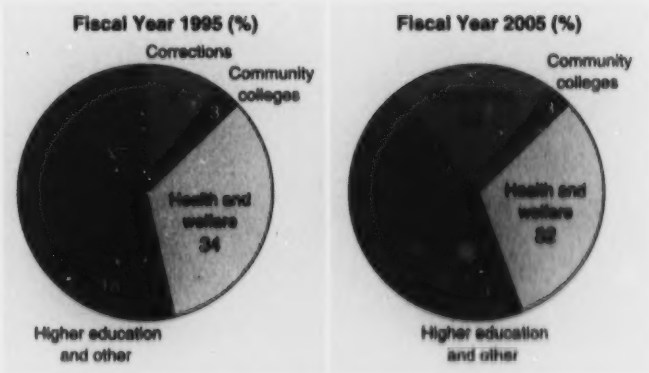

Figure 10—Distribution of California General Fund Expenditures

through 2005 to indicate their consequences.[10]

Clearly, state government support for higher education has declined both economically and politically over a long period, and it will be difficult to bring it back to previous levels. Now that there are stringent fiscal limits on public resources, the state government is beginning to ask the same kinds of questions of colleges and universities that it has asked of the health care industry—questions about cost, productivity, efficiency, and effectiveness. Until institutions of higher education can provide good answers to such questions, it will be difficult to increase public support and to regain the priority formerly given to higher education in federal and state budgets.

Tuition Growth

Because government funding has not kept pace with costs, institutions have had to increase tuition.[11] Figure 11 plots trends, per FTE student, in real tuition, real costs, and real government unrestricted support in California's public colleges and universities, relative to what they were in 1981.[12] Because government support essentially covered higher education's costs throughout the 1970s, tuition was quite low at the beginning of the 1980s. However, government support fell slightly below costs per student (in real terms) in the 1980s. To make up the difference, tuition—only about 5 percent of the amount provided by the government in 1981—had to increase sharply: It doubled by 1985. As government support fell further in the 1990s, tuition continued to soar. By the late 1990s, tuition in California's public colleges and universities was four times as high as it had been two decades earlier.[13]

[10]Stephen Carroll, Eugene Bryton, C. Peter Rydell, and Michael A. Shires, *Projecting California's Fiscal Future*, MR-570-LE, Santa Monica, Calif.: RAND, 1995.

[11]Although the University of California uses the term *fees* instead of *tuition*, this report uses *tuition* throughout.

[12]California Postsecondary Education Commission, "Student Tuition and Fee Charges and Revenues," *Fiscal Profiles 1996*, displays 4, 26-31, and 53-56.

[13]Figure 11 shows gross real tuition and thus does not speak, for example, to the increasing efforts of institutions to lower the net price to many students. Many students actually pay less than full tuition. Indeed, one of the reasons for the increasing price of higher education is that universities and colleges are attempting to maintain access for low-income students by offering aid packages to make up for reduced state support.

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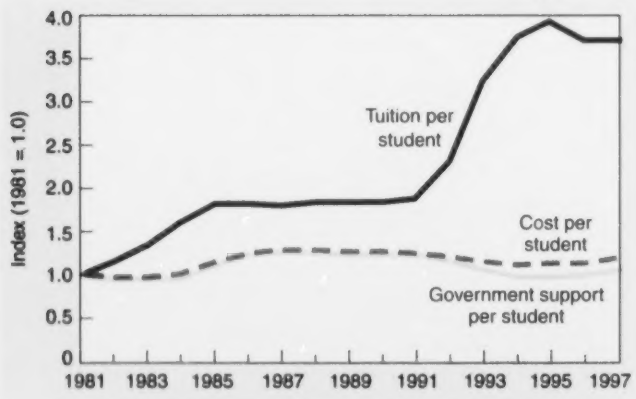

Figure 11—Growth of Tuition in California

If appropriate steps are not taken, higher education in California could become so expensive that between 30 and 45 percent of students (600,000 to 900,000 FTE students) will be denied access. If average real tuition, adjusted for inflation, quadruples again in the next 20-year period (1996 to 2015), large numbers of students will be priced out of the system.[14] The consequences of such exclusion will not be confined to the affected student population. Those who are denied access to college will probably not be able to afford to send their children to college 20 years later. The social and economic ills generated by inadequate levels of education will reverberate through successive generations.

Increased private sector support of higher education by alumni, other individuals, corporations, and foundations can help and has done so already—private grants, gifts, and endowment income have roughly doubled over the past two decades. However, private sector and endowment income represents a relatively small proportion of the total higher education budget and is more concentrated in the private, relatively elite, and wealthy institutions that serve a smaller share of the total student population.[15]

[14]From 1985 to 1989, state need-based aid grew faster than undergraduate enrollment and tuition at each of the public higher education systems. This pattern changed significantly from 1990 to 1994. While need-based aid grew more rapidly than it had in the earlier period, it fell well behind the growth of tuition at each of the public higher education systems.

The California Master Plan's original purpose of providing student financial aid primarily for private institutions changed dramatically from the 1960s to the 1990s. In 1961, more than 91 percent of the State Scholarship Commission's grants went to students in the private sector. By 1994, the proportion had fallen to 30 percent. The number of awards in the Cal Grant A portion of the program, which provides coverage primarily for tuition for private institutions, doubled from 1970 to 1980 (going from 15,914 to 38,735), but grew hardly at all during the 1980s and 1990s. This dramatic decline was not the result of the state's adopting a policy to redirect funds away from the independent sector. Rather, it was a natural by-product of the state's adding numerous grant programs having purposes other than providing grants to private institutions. The negative consequences of this trend should be recognized and reversed, and the California grant program should be expanded so that the independent colleges can accommodate an additional 40,000 to 80,000 undergraduate students.

[15]For trends in private giving, see Council for Aid to Education, *Voluntary Support of Education*, New York, annual. (See also www.cae.org.)

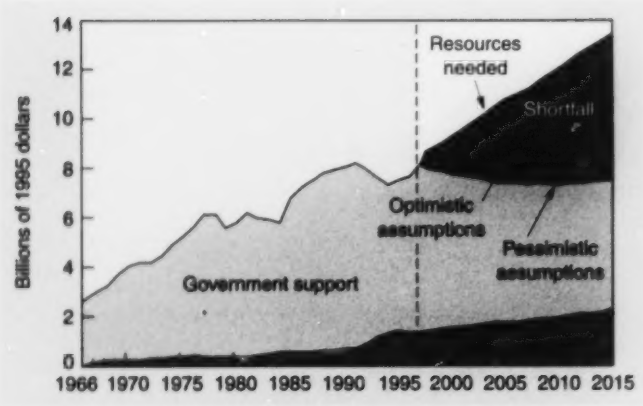

Figure 12—Funding Shortfall Facing California Higher Education in the Next 20 Years

The Bottom Line

Given funding projections, it will be extremely difficult even to maintain today's enrollment rates, let alone provide for future increases. Until now, institutions have been paying for rising costs by sharply increasing tuition. However, such increases will shortly reach the point where they begin to deter Californians from pursuing higher education. In fact, there is some evidence that they have already done so.[16] If colleges and universities stop using tuition hikes to fill the resource gap, their fiscal prospects will be bleak. Figure 12 illustrates the dimensions of the problem. It assumes tuition increases are capped at the rate of inflation and that current trends in participation and costs continue. Given these assumptions, it projects two scenarios for government support. The pessimistic projection is based on RAND forecasts of California's general fund revenues and state spending for corrections, health and welfare, and K–12 education through 2005, extrapolated through 2015. The optimistic projection assumes government appropriations to public higher education will continue to grow at the rate established when California emerged from its recent recession.

As can be seen, even if the optimistic funding level is realized, the public higher education sector will fall far short of what it needs for operation by the year 2015. In 1995 dollars, higher education will have to spend about $13.6 billion annually to serve future students if costs continue to grow at current rates. If the optimistic assumptions prevail, public funding and tuition will provide about 70 percent of that amount in 2015. If the level of public funding does not grow, however, resources from state and local government and tuition will provide just over half of what California's colleges and universities will need to serve the student population in 2015.

Window of Opportunity

The recent upsurge in the California economy gives higher

[16]See Michael A. Shires, *The Future of Public Undergraduate Education in California*, MR-561-LE, Santa Monica, Calif.: RAND, 1996.

education and political leaders breathing space that should be used to discuss, debate, and respond to the economic and social trends we have described. Good economic conditions are inevitably followed by recessions, and there is no reason to believe that the current high rates of economic growth, and the consequent increases in state and local government revenues, will continue for very long. Real personal income in California grew rapidly in the early 1970s, declined in the mid-1970s, and then grew into the 1980s. A sharp recession in the early 1980s was followed by robust expansion through the remainder of the decade, but the good economic conditions of the late 1980s then ushered in California's most severe recession in half a century. In brief, decisionmakers cannot assume that the fiscal crisis facing higher education in California (and, for that matter, the nation) has been averted. Rather, they must recognize that they are being given an opportunity to plan for the inevitable fiscal constraints of the future. In the spirit of contributing to the needed debate, we offer our recommendations next. •

Recommendations

The challenges we have delineated in this report should be addressed through increased state investment combined with far-reaching institutional reforms that will provide high-quality education at lower cost. What we envision is that the increased public funding will be tied to institutional reform as a way to create incentives for improved productivity.

Our rationale for proposing this combination is that both elements are necessary, but alone insufficient, for meeting the fiscal challenges facing higher education. Moreover, since any future increases in state support for higher education are likely to come through a reallocation of existing government commitments rather than through new revenues from tax increases, our logic is as follows.

The state legislature and governor must be convinced that the politically painful task of reallocating the general revenues is essential. They are likely to come to this point only if persuaded by the private sector leaders who, after all, are the primary consumers of the graduates and research put out by higher education. And the private sector leaders will make the case for increased state resources for higher education only if they are convinced that California's colleges and universities are truly undergoing the restructuring that leads to increased productivity. Hence, the marriage of increased public investment and institutional restructuring.[17]

Recommendation 1:

California's political leaders—the governor, members of the state legislature, mayors, and other state and local officials—should reallocate public resources to reflect the growing importance of education to the economic prosperity and social stability of California.

If Californians had known how the educational requirements of the workforce were going to grow in the 20 years from 1976 to 1995, it is doubtful that they would have allowed public funding for postsecondary education to stagnate as it has. We believe Californians should no longer tolerate inaction: California should not be allowed to continue to drift toward the ominous levels of economic inequality implied by recent trends. We are confident that once the California public and its leaders are aware of the dangers of the current course, they will act to increase public support for higher education—even if that means reducing the level of support for other public sectors.

[17] However, Dr. Richard Atkinson, President of the University of California, calls attention to the implications of restructuring for the quality of higher education in a comment on a previous draft of this report (Letter of June 9, 1997 to Roger Benjamin, quoted by permission): "The discussion of restructuring needs to be considered in a larger context. Your data point to the increasing value of higher education to the individual. Simultaneously, the complexity of our knowledge—knowledge created, accumulated, and delivered in the research university—is increasing, not decreasing. While there are obviously improvements, enhancements, and efficiencies that can be made in the current system, it is important to note that we are providing an increasingly valuable and complex product and we must direct our efforts to the task of finding the funds appropriate for that product. I worry that we will be asked to carry out our mission with fewer resources and a resulting decrease in the quality of the product. I believe we are mindful of the problems that confront higher education and that we want to solve those problems in a manner that recognizes both family budgets and state and federal resources."

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For example, we believe it is a reasonable goal for the state government to reduce the deficit facing the higher education sector by half. The state might commit to providing one-third of the needed increase, with federal and local governments providing the remaining two-thirds. We realize that this is an audacious goal given the current stresses on federal, state, and local budgets, but to do less is to put California at grave risk. The other half of the future deficit could then be made up through productivity gains resulting from the institutional reforms we recommend coupled with modest increases in tuition and fees.

Our institutional reforms—Recommendations 2, 3, and 4—are to be viewed as an integrated package that would place restructuring at the top of the agenda for California's higher education leaders. The promising pilot productivity enhancements already under way and being led by the presidents of the state's three public systems of postsecondary education should be viewed in this context—i.e., the ongoing Cornerstones project, California State University; the reform package initiated by the community college system in 1996; the 1995–1996 compact between the University of California, California State University, and the state that yielded $10 million in savings; and educational technology innovations in each of the systems. Faculty, too, have developed serious projects that put into action many of the reform principles recommended here. The task is to institutionalize these exemplary reforms, to make them the norm rather than the exception, and to scale them up to create a wholesale, systemic restructuring of the way in which resources are allocated.

Recommendation 2:

California institutions of higher education should make major structural changes in their decisionmaking systems so that their leaders can assess the relative value of departments, programs, and systems in order to reallocate scarce resources.

In our view, the most pressing reform needed today in the higher education sector is redesign of the governance structure of institutions so that decisionmakers can think and act strategically. In particular, colleges and universities must

1. **Improve performance-based assessment.** Academic institutions should develop a process of assessing the costs and benefits of providing all services. The goal of this effort is to provide an integrated information system about all costs, including capital costs and the value added to students of their educational experience. We believe that unless California higher education leaders move toward systematic performance-based assessment, the higher education sector will not be able to compete effectively with other demands on state general revenues in the future.

2. **Define and measure faculty productivity.** Productivity in higher education is, of course, difficult to define, but analysis needs to be conducted to identify productivity measures for education in general and for faculty in particular. No fundamental restructuring can occur until the current incentive system governing faculty behavior is changed. The current system of rewarding individual research and publication will continue to discourage faculty from focusing their energies on teaching improvements unless faculty incentives are connected to measurements of student performance.

3. **Improve internal accountability in financial management.** Budgeting and fund accounting systems, for example, are now completely separate. They should be reconciled so that higher education leaders have access to timely "profit and loss" information in areas for which they provide oversight.

Recommendation 3:

As part of their overall restructuring, California's colleges and universities should pursue greater mission differentiation to streamline their services and better respond to the changing needs of their constituencies.

Greater mission differentiation among California postsecondary education institutions and systems is the only way to ensure effective and efficient provision of all teaching and research functions over the next several decades. The current "mission creep" in and among the three public postsecondary education systems—e.g., community colleges attempting to offer four-year degrees, state universities becoming research centers, and research universities offering remedial instruction—violates the mission differentiation principle.

If the higher education systems and the individual institutions focus on their points of comparative advantage within the overall ecology of higher education, both productivity and improved quality will result. Each system and each institution should carefully redefine its mission and roles, the objective being to more sharply differentiate campuses and academic programs within and between the three systems and the independent colleges, which are an essential part of the overall ecology of postsecondary education in California. Because of resource constraints, leadership on each campus should focus on strategic-planning and priority-setting programs. If this strategy is followed, greater inter-institutional cooperation will be possible because each campus will be better focused on what it can do well and there will be less duplication. The end result will be a more effective and efficient system of higher education that is greater than the sum of its parts.

In considering whether to maintain, drop, or develop a particular mission focus or academic program, the following comparative evaluation criteria should be applied: quality, centrality, cost, and comparative advantage. If, for example, a college of agriculture exists in one system, does it

need to be replicated elsewhere? How many classics departments are needed from the state's perspective? The system's perspective? Can a specific college exist without classics, or is the subject too central to the core mission of the institution to allow its elimination regardless of its possible high costs?[18]

In short, the community colleges, undergraduate universities, and research universities should embrace different missions, give priority to activities central to those missions, and reduce or eliminate more-marginal activities.[19] We recommend the following specifics:

1. **California community colleges should take a leadership role in workforce preparation.** They need to expend more effort on education and training targeted to multiple constituencies, particularly workforce preparation, adult education, remedial education, and English as a Second Language. As our analysis suggests, one of the state's most pressing social needs is improving the education level of all socioeconomic groups to avoid creating a larger and more permanent underclass. Institutions of higher education need to become more active partners in this enterprise. Because employers, high schools, and local governments are important stakeholders, community colleges should develop long-term strategic partnerships with these entities. We recommend that the state provide greater incentives for employers, high schools, local authorities, and colleges to work together in designing and funding school-to-work programs that reach out to the community at large and to underrepresented groups in particular.

   As part of this initiative, colleges need to identify, strengthen, and give visibility to programs already focused on this outcome. These should be continued, improved, and built upon. To encourage commitment to such socially responsive initiatives, colleges should evaluate faculty work in ways that provide the right incentives. To raise the priority given to the workforce preparation mission, the current governance structure of the California community college system will have to be examined and redesigned. In its current state, that structure is not supportive of the proposed mission.

2. **The California State University system should take the lead in teacher training and areas related to regional economic development.** Eligibility for college will not improve among low-income socioeconomic

[18] We offer model comparative evaluation criteria in our "Impediments and Imperatives in Restructuring Higher Education" reprinted from *Education Administration Quarterly*, Vol. XXXII, Supp., December 1996, in this report's volume of supporting analysis.

[19] *A Framework for Linking Resources to Mission in Higher Education*, provided in this report's volume of supporting analysis, presents a set of analytic tools useful for any institution or system of higher education contemplating changes in its mission.

groups unless K–12 school reform succeeds, and training and retraining of K–12 teachers is a prerequisite to that success. Recent studies show that teacher training in America, including California, is in disarray. We believe the most effective response to this problem is for the California State University campuses, which prepare 10 percent of America's teachers, to assume central leadership for teacher training and to make teacher training one of their highest priorities. In addition, faculty of the state's public undergraduate institutions should be encouraged to assume a stronger leadership role in research and technical assistance for regional economic development. This applied research capability will enable these institutions to relate to the needs of the regions in which they exist.[20]

3. **The major California research universities, public and private, should focus on the promotion of research and graduate education.** The University of California is the state's flagship research institution. In no way should its research mission be undermined by the extraordinary access demands identified in this study. The state must protect and enhance this mission and, at the same time, respond to the surge of enrollment demands California will have. The selective admission criterion designating the top 12.5 percent of high school graduates as eligible for the University of California is a built-in and appropriate method for ensuring that the resources for undergraduate instruction are used efficiently.

California is particularly fortunate in being able to claim close to one-quarter of the top 40 research universities—private ones such as Stanford and the California Institute of Technology, and an increasingly large number of the University of California campuses, altogether representing the greatest concentration of scientific talent in the nation.[21] The question now is how to maintain this extraordinary critical mass of talent in the face of tightening fiscal constraints. The future of California's economy depends largely on whether the University of California can continue to produce the extraordinary science and technology that fuels the state's economic growth.

The public and private higher education leaders of the state's top research universities should join together to encourage the federal government to focus its investment in research on the 40 or so major research institutions across the country. Unlike international competitors such as Japan and Germany, the United States does not

[20]This is especially pertinent in fast-growing parts of California having large urban populations and economically depressed areas.

[21]See Hugh Davis Graham and Nancy Diamond, *The Rise of American Research Universities: Elites and Challengers in the Postwar Era*, Baltimore and London: Johns Hopkins University Press, 1997. The authors document the extraordinary rise of several University of California campuses in national research rankings in recent years.

direct its dwindling federal resources to a few elite research groups. Instead, it spreads them among more than 800 universities and laboratories. From 1976 to 1995, research funding grew only slightly, but the number of institutions receiving this funding increased by several hundred. Even more important, most of the U.S. institutions now receiving federal support for research are not even Carnegie-rated research and doctorate-granting universities.[22] This poorly targeted funding may not have mattered much in the golden years of U.S. science and technology development, but now, with the decline in federal support of research, it poses a serious threat to the long-term health of the nation's economy.[23] This is doubly true for California, where the University of California, for example, receives over 20 percent of its budget from federal research sources.

Recommendation 4:

Colleges and universities should develop sharing arrangements to improve productivity.

As increased mission differentiation is achieved, a greater sharing of resources will lead to improved productivity of the entire higher education system:

1. **Alignment.** Seamless alignment of undergraduate requirements, transfer requirements, and joint teaching and degree-producing arrangements among California community colleges, California State University campuses, and the University of California is now technically feasible and should be achieved over the next decade. Given the benefits of the new educational technologies afforded by the Internet, it is time for intersegmental alignment of undergraduate instruction to be required by policymakers inside and outside California higher education. Achievement of this goal alone would substantially increase undergraduate participation rates.

2. **Classes.** Every college and university teaches microeconomics at the freshman level; virtually every research university offers several introductory statistics courses. Departments and universities should collaborate to pool introductory courses and instructors as a way to save resources and provide the best instruction avail-

[22]The top 40 science and engineering departments garner over 75 percent of federal research support while several hundred other such departments share the other 25 percent.

[23]We leave open to public debate the most appropriate mechanism for implementing this reform. One option would be for the National Science Foundation to request universities to provide their qualifications in each research area. The Foundation could then identify the most qualified in each area and guarantee them a minimum level of support. Another option would be for the federal government to provide funding to graduate students for vouchers that could be used at the institution of their choice. The resulting competition would effectively decrease the fragmentation of funding to research universities. Whatever the mechanism, we believe there is great value in concentrating scarce dollars in the most worthy institutions, and California has much to gain by encouraging the federal government to do so.

able in the subject. Use of the Internet may facilitate this task.

3. **Services.** Joint outsourcing of functions should be encouraged, ranging from physical plant maintenance, electric power, health care, and police protection to joint purchasing of instructional and research equipment and supplies.

4. **Infrastructure.** Free-standing, separate physical plants—and, if they are public institutions, the system administrations that govern them—are currently an unquestioned requirement. In the coming cyberspace age, physical space will assume less importance. Combining all or parts of physical plants of, say, the California state universities and community colleges that serve the same geographical area could save considerable resources.

5. **Libraries.** Substantial savings and improved library services can be obtained by focusing on the software needed to place library resources on the Internet rather than continuing to support individual research library collections.

Recommendation 5:

California should reexamine the financing structure for higher education and develop a strategic plan for allocating the limited resources it has available to most effectively meet future educational demands.

Higher education in California is currently financed by a diverse variety of systems, each of which has evolved somewhat independently over time, often in response to immediate pressures. The resultant financing structure includes direct state support to each of the public systems; local support to the community colleges; tuition; federal, state, and private research grants and contracts; and various other revenue sources (e.g., lottery funds). Tuition, in turn, is partially subsidized by state and federal student financial aid programs and includes payments by students and their families out of past savings and current income, as well as payments by students and their families supported by loans. The state needs to systematically review

1. **Appropriate shares.** California must make policy judgments about the share of higher education expenses that should properly be borne by families, the state, and the federal government.

2. **Institutional versus student support.** California must make policy judgments about the appropriate mix of direct support to public institutions and indirect support to both public and private institutions through student financial aid programs. For example, California grants have declined dramatically in the last two decades and would appear to be candidates for substantial increases.

3. **Need-based pricing.** California must develop a strategy about need-based differentiated pricing. The present mix of state student

financial aid programs provides aid to students in both public and private institutions; state appropriations to the public systems, some of which are channeled into support for institutional financial aid/fee waiver programs; and tuition, some of which is used to support institutional financial aid/fee waivers. Does this mix serve the state's access goals?

4. **Guaranteed financing for higher education.** Propositions 98 and 111 established an explicit commitment to state funding for K–14 education. California should determine whether a similar commitment to state funding for higher education would be appropriate, and, if so, what that commitment should be. In making this determination, the state should decide whether the community colleges will continue to be included in the Proposition 98/111 guarantee, and, if so, whether their share of that guarantee should be more firmly established.

Recommendation 6:

It is time to redefine the appropriate level of education for all California workers in the 21st century. The Master Plan should be reaffirmed and strengthened, and the education level expected of all California citizens should be raised from high school to the completion of appropriate postsecondary education or training.

Almost a century ago, Americans established a high school education as the basic educational requirement for all citizens. At that time, the telegraph was the height of communications technology and the telephone was on the horizon but far from an everyday instrument. Engineers and scientists looked to their slide rule as the best instrument for advanced calculations. Today, computers, the Internet, and a host of advanced technologies are everyday work tools. Clearly, it is time to recognize that the required education level of a century ago is no longer adequate for preparing the modern workforce.

Instead of retaining the traditional sharp distinction between the bachelor's degree and all other nondegree categories, we find it preferable to think in terms of a continuum of learning activities appropriate for attaining specific goals. In the future, the educational focus should move away from bachelor's degrees and toward more-specific, measurable knowledge sets. It is time to encourage the rich range of subbaccalaureate opportunities that can provide California's citizens with the tools needed to survive and succeed in the emerging high-skill economy. ◆

Afterword

Neither the recommendations of this study nor the recommendations that the California Education Round Table makes in the next 12 to 18 months will "solve" the problems of California postsecondary education. The situation that existed in 1960 when the Master Plan was formulated was fundamentally different from today's situation and, we project, what will exist in the future. Different task forces will have to be formed to design appropriate responses to specific recommendations. And all must be done soon, since there is a window of opportunity of only three to five years in which to get the new California postsecondary system working right. After that, the demographic and revenue challenges we have identified may well overwhelm the state's ability to respond positively. Time is of the essence.

We are clear on which players must come together in partnership to address the overall task. The higher education leaders—embodied by the California Education Round Table—the state's business leaders, and the governor and state legislators are all essential for meeting the challenges that lie ahead for California higher education. ◆

Supporting Documents

Benjamin, Roger, and Stephen J. Carroll, *A Framework for Linking Resources to Mission in Higher Education*, DRU-1623-IET, Santa Monica, Calif.: RAND, January 1997.

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These documents may be ordered from RAND Distribution Services, Telephone: 310-451-7002; Fax: 310-451-6915; or Internet: order@rand.org.

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